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S/N 10/032,703 **PATENT**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Kenneth B. Close et al.	Examiner: Unknown
Serial No.:	10/032,703	Group Art Unit: 1771
Filed:	December 28, 2001	Docket: 1443.002US1
Title:	METHOD AND APPARATUS FOR CONTROLLING RETRACTION OF COMPOSITE MATERIALS	

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Prior to taking up the above-identified application for examination, please amend the above-identified patent application as follows.

IN THE FIGURES

Please amend Fig. 10 to change the direction of lines 1010 from vertical to approximately 45 degrees. This is to conform the direction of the lines to the machine direction, as indicated by arrow 1005. Two copies of the drawing with the amendment marked in red ink (one copy of original red ink marked-up drawing and one copy of the red ink marked-up drawing with the incorporation of the amendment), as well as a clean copy of the proposed amended drawing, are attached herewith.

IN THE SPECIFICATION

Please make the paragraph substitutions indicated in the appendix entitled Clean Version of Amended Specification Paragraphs. The specific changes incorporated in the substitute paragraphs are shown in the following marked-up versions of the original paragraphs:

The paragraph beginning at page 10, line 8, is amended as follows:

The composite elastic material of the present invention can have a cup crush to density ratio from about 1579 [cm^2] $\underline{cm^4}$ to about 950 [cm^2] $\underline{cm^4}$. The preferred cup crush to density ratio for the composite elastic material is from about 1500 [cm^2] $\underline{cm^4}$ to about 1000 [cm^2] $\underline{cm^4}$. A

more preferred cup crush to density ratio for the composite elastic material is from about 1400 [cm^2] cm^4 to about 1100 [cm^2] cm^4. The most preferred cup crush to density ratio for the composite elastic material is from about 1300 [cm^2] cm^4 to about 1100 [cm^2] cm^4.

The paragraph beginning at page 14, line 20, is amended as follows:

During heat activation the speed that the material passes over the rollers, 403, 404, and 405 can be varied. If multiple rollers are employed the speed that the material passes over the rollers can be the same or different, *e.g.*, the quenching vacuum roller(s) 405 can be run at a slower speed than the vacuum roller(s) in the heating section (mechanism) 403 and 404 to allow retraction to occur prior to cooling the web. It is important that the residence time in the heating chamber(s) is sufficient to allow the elastic layer to be heated [to a] sufficiently to allow it to retract.

The paragraph beginning at page 17, line 16, is amended as follows:

The composite elastic material has a density less than about 0.085 g per cubic cm and a CD tensile strength of greater than about 0.68 pounds. The composite material can have a cup crush less than about 120 g per cm and can have a cup crush to density ratio of less than about 1579 [cm^2] cm^4 and greater than about 950 [cm^2] cm^4. Preferably, the cup crush to density ratio can be less than about 1500 [cm^2] cm^4 and greater than about 1000 [cm^2] cm^4. More preferably, the cup crush to density ratio can be less than about 1400 [cm^2] cm^4 and greater than about 1100. Most preferably, the cup crush to density ratio can be less than about 1300 [cm^2] cm^4 and greater than about 1100.

The paragraph beginning at page 36, line 7, is amended as follows:

One measure of the softness of a non-woven fabric sheet 1202 is determined according to the "cup crush" test by system 1100. The cup crush test evaluates fabric stiffness by measuring the peak load (also called the "cup crush load" or just "cup crush") required for a 4.5 cm diameter

hemispherically shaped foot 1108 to crush a 17.8 cm by 17.8 cm piece of fabric 1202 shaped into an approximately 6.5 cm diameter by 6.5 cm tall cup shape, while the now cup shaped fabric is surrounded by an approximately 6.5 cm diameter cylinder cup 1110 to maintain a uniform deformation of the cup shaped fabric 1102. There can be gaps between the ring 1114 and forming cup 1110, but at least four corners 1106 must be fixedly pinched therebetween. The foot 1108 and cylinder cup 1110 are aligned to avoid [contract] <u>contact</u> between the cup walls and the foot that could affect the readings. The load is measured in grams, and recorded a minimum of twenty times per second while the foot is descending at a rate of about 406 mm per minute. The cup crush test provides a value for the total energy required to crush a sample (the "cup crush energy") which is the energy over a 4.5 cm range beginning 0.5 cm below the top of the fabric cup, i.e., the area under the curve formed by the load in grams on one axis and the distance the foot travels in millimeters on the other. Cup crush energy is reported in gm-mm (or inch-pounds). A lower cup crush value indicates a softer material. A suitable device for measuring cup crush is a model FTD-G-500 load cell (500 gram range) available from the Schaevitz Company, Pennsauken, N.J.

The paragraph beginning at page 39, line 6, is amended as follows:

In the second bank in the meltblown process operates as a conventional meltblown head. The molten thermoplastic is extruded through fine die capillaries converging into a hot air stream, which attenuates the filaments of molten material reducing their diameter. The high velocity air stream carries these meltblown fibers to the constant speed foraminous surface. Such a process is disclosed for example in U.S. Pat. No. 3,849,241 to Butin. The meltblown head used here utilizes 0.0368 cm diameter capillaries at a density of 12 capillaries per cm, and operates at a melt temperature of 250°C. The elastomeric polymer used to produce the meltblown fibers is a dry blended resin in the following proportions: 80% Dow Affinity® XUS59400.03L, 15% Regalrez 1126, and 5% Dow 6806. As the meltblown fibers are deposited on the foraminous surface carrying the previously formed, substantially parallel[,] filament<u>s,</u> autogeneous bonding occurs and discrete points where the still molten fibers cross over the filaments. The basis

weight of the web prepared is about 9 grams per square meter.

The paragraph beginning at page 39, line 25, is amended as follows:

The web is transported to an S-wrap roll arrangement by a series of idler rollers. The S-wrap rollers are driven to control their speed, and this combined with the large surface contact area serves as a nip. The speed of the foraminous meltblown forming belt and S-wrap rollers travel at about the same speed and this speed is 50% of the speed of the calender rolls. This speed difference results in a 100% elongation of the elastic web between the S-wrap rolls and the calender roll. This stretching effect reduces the basis weight by about 50% (*e.g.*, due to web necking) and imparts significant stored energy to the elastomeric web as it is presented to be joined with the gatherable layers.

The paragraph beginning at page 42, line 3, is amended as follows:

In order to obtain further retraction and increase the dimensional stability of the composite it is transferred to a foraminous drum in chamber 410 where it is held by vacuum. While held on the rotating, foraminous drum (*e.g.*, 403 of Fig 4A), or similar surface, the temperature of the web is elevated near the glass transition temperature (T_g) of the elastomeric center layer by drawing a heated air stream through the web. Monitoring the temperature of the elastomeric portion of the composite is not possible as it is located between the gatherable layers and therefore the temperature of the external gatherable layers is used to monitor the process and is measured as it exits or transitions off the foraminous drum. This is a reasonable approximation [as] for the heat transfer with the through-air process. The external web temperature required for this example is about 55°C. Once heated the web is transferred to a second vacuum drum in chamber 411 (*e.g.*, 404 of Fig 4A), or similar surface, through space. The web is them transferred to a subsequent vacuum drum in chamber 412, (e.g., 405 of Fig 4A), which is traveling slower than the heated drums (approximately 5% for this example) and additional retraction occurs between the two surfaces. Again an increase in basis weight of the

web occurs. The [second] third drum draws ambient air through the web reducing the temperature following the retraction step.

IN THE CLAIMS

Please substitute the claim set in the appendix entitled Clean Version of Pending Claims for the previously pending claim set. The substitute claim set is intended to reflect amendment of previously pending claims 1, 16-18, and 41. The specific amendments to individual claims are detailed in the following marked up set of claims.

1. (AMENDED) method comprising[']

   a) providing a non-woven composite elastic material under tension;
   b) heating the composite elastic material;
   c) retracting the heated composite elastic material; and
   d) cooling the composite elastic material.

2. The method according to claim 1, wherein heating comprises heating the material by drawing heated air through the composite elastic material.

3. The method according to claim 1, wherein heating comprises heating the material to the softening point of the elastic layer.

4. The method according to claim 1, wherein retracting comprises retracting the material from about 2 % to about 15 %.

5. The method according to claim 1, wherein retracting comprises retracting the material from about 4 % to about 10 %.

6. The method according to claim 1, wherein heating comprises heating the composite elastic material on a first roller and cooling the material on a subsequent roller.

7. The method according to claim 1, wherein the composite elastic material is heated on a first roller, on a second roller, and cooling the material on a subsequent roller.

8. The method according to claim 6, wherein the speed of the material on the subsequent roller is about 2 % to about 15 % slower than the speed of the first roller.

9. The method according to claim 8, wherein the speed of the material on the subsequent roller is about 4 % to about 10 % slower than the speed of the material on the first roller.

10. The method according to claim 7, wherein the speed of the material on the subsequent roller is from about 2 % to about 15 % slower than the speed of the material on the second roller.

11. The method according to claim 10, wherein the speed of the material on the subsequent roller is from about 4 % to about 10 % slower than the speed of the material on the second roller.

12. The method according to claim 9, wherein heated air is drawn through the first roller and the second roller.

13. The method according to claim 9, wherein cool air is drawn through the subsequent roller.

14. The method according to claim 1, wherein the composite elastic material has a density less than about 0.085 g per cubic cm and has a CD tensile strength of greater than about 0.68 pounds.

15. The method according to claim 1, wherein the composite elastic material has a cup crush less than about 120 g per cm and a CD tensile strength of greater than about 0.68 pounds.

16. (AMENDED) The method according to claim 1, wherein the composite material has a cup crush to density ratio of less than about 1579 [cm^2] cm^4 and greater than about 950 [cm^2] cm^4.

17. (AMENDED) The method according to claim 1, [wherein the] wherein cooling includes cooling the composite material at on the subsequent roller, and then cooling on the winder roll.

18. (AMENDED) The method according to claim 17, [wherein the] wherein cooling includes cooling the composite material to first temperature on the subsequent roller and then cooled to a second temperature on the winder roll.

19. The method according to claim 18, wherein the first temperature is greater than the second temperature.

20. An apparatus for activating a composite elastic material comprising

a) a material source providing the composite elastic material;

b) a heating mechanism for heating the composite elastic material;

c) a retracting mechanism receiving the composite elastic material from the cooling mechanism; and

d) a cooling mechanism for cooling the composite elastic material from the heating mechanism.

21. The apparatus according to claim 20, wherein the material is a continuous web, the material is moved at a first speed and a second speed in the retracting mechanism.

22. The apparatus of claim 21, wherein the first and second speeds are different.

23. The apparatus of claim 22, wherein the first speed is greater than the second speed.

24. The apparatus of claim 23, wherein the first speed is about 846 feet per minute.

25. The apparatus of claim 21, wherein the material moves at a third speed in the retracting mechanism.

26. The apparatus of claim 25, wherein the first and third speeds are different.

27. The apparatus of claim 25, wherein the first speed is greater than the third speed.

28. The apparatus of claim 25, wherein the second and third speeds are different.

29. The apparatus of claim 25, wherein the second speed is greater than the third speed.

30. The apparatus of claim 25, wherein the second speed is less than the third speed.

31. The apparatus of claim 25, wherein the first speed is about 846 feet per minute.

32. The apparatus of claim 25, wherein the second speed is about 805 feet per minute.

33. The apparatus of claim 25, wherein the third speed is about 769 feet per minute.

34. The apparatus of claim 25, wherein the first speed is about 846 feet per minute, wherein the second speed is about 805 feet per minute, and wherein the third speed is about 769 feet per minute.

35. The apparatus of claim 25, wherein the retracting mechanism includes a first roller, a second roller, and a third roller, the material moves at the first speed on the first roller, the material moves at the second speed on the second roller, the material moves at the third speed on the third roller.

36. The apparatus of claim 35, wherein the cooling mechanism includes a winder receiving the material from the retracing mechanism, and the material moves onto the winder at a fourth speed.

37. The apparatus of claim 36, wherein the fourth speed is less than the first speed.

38. The apparatus of claim 37, wherein the first speed is greater than both the second speed and the third speed.

39. The apparatus of claim 36, wherein the first speed is about 846 feet per minute, wherein the second speed is about 805 feet per minute, wherein the third speed is about 769 feet per minute, and wherein the fourth speed is about 800.

40. The apparatus of claim 20, wherein the retracting mechanism comprises:

a first roller in contact with the material;

a second roller in contact with the material subsequent to the first roller;

wherein the heating mechanism comprises:

a heat source for supplying a heated gas;

a first vacuum inlet positioned within the first roller to draw the heated gas

through the material and the first roller; and

wherein the cooling mechanism comprises:

a coolant source for supplying a coolant; and

a second vacuum inlet positioned within the second roller to draw the coolant through the material and the second roller.

41. (AMENDED) The apparatus of claim [43] 40, wherein the material is a continuous web, the material exits the first roller at a first temperature, the material exits the second roller at a second temperature, the second temperature being less than the first temperature.

42. The apparatus of claim 41, wherein the retracting mechanism includes a third roller receiving the material from the first roller prior to the second roller, the material exits the third roller at a third temperature, and the third temperature is greater than both the first temperature and the second temperature.

43. The apparatus of claim 42, wherein the material at the material source is at a fourth temperature, and the fourth temperature is less than both the first temperature and the second temperature.

44. The apparatus of claim 40, wherein the third temperature is about 145 degrees F, the second temperature is about 118 degrees F, and the fourth temperature is about 80 degrees F.

45. The apparatus of claim 20, wherein the material moves from the material source at a speed of about 846 feet per minute and a temperature of about 80 degrees F.

46. The apparatus of claim 45, wherein the retracting mechanism moves the material at a first speed of about 846 feet per minute on the first roller and at a second speed of about 805 feet per minute on the third roller, and wherein the heating mechanism heats the material to about 145 degrees F when the material is traveling at the second speed on the third roller.

47. The apparatus of claim 20, wherein the heating mechanism heats the material while the material travels through the retracting mechanism, and wherein the cooling mechanism subsequently cools the material as the material travels through the retracting mechanism.

48. A composite elastic material prepared according to the process of claim 1.

REMARKS

Applicants have amended Fig. 10 of the drawings. Support for this amendment may be found in the specification at page 47, lines 3 and 5-6 combined with Fig. 10 as filed. The machine direction in this figure is indicated as by arrow 1005. As stated in the specification, particularly at page 47, the fibers illustrated by the dashed lines 1010 in Fig. 10, extend in the machine direction.

Applicants have made various amendments to the specification at pages 14, 36, 39, and 42, in order to correct minor typographical and/or grammatical errors. In addition, Applicants have amended claims 1, 17 and 18 to correct minor typographical and/or grammatical errors. Claim 41 was amended to correct its dependency. No new subject matter has been added.

The amendments at pages 10 and 17 and in claim 16 are to correct the units of the cup crush to density ratio from cm^2 to cm^4. Support for this amendment can be found in the specification, particularly at page 46, in Table 2. Applicants note that in Table 2, the units for cup crush are g x cm. (See, *e.g.*, page 9, line15 and page 46, Table 2, 4^{th} column.) The units of density are cm^3. (See, *e.g.*, page 10, line7 and page 46, Table 2, 10^{th} column.) The ratio of cup crush to density would provide units of cm^4 (g cm divided by g /cm^3). Thus, a person having ordinary skill in the art would recognize that the correction of the term from cm^2 to cm^4 at pages 10, 17, and in claim 16 is a minor typographical error and is supported by the specification.

It is respectfully submitted that none of the amendments to the application presented herein constitute new matter.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (612-373-6968) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

KENNETH B. CLOSE ET AL.

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on this 24 day of June, 2002.

JASON D. SMITH
Name

[signature]
Signature

CLEAN VERSION OF AMENDED SPECIFICATION PARAGRAPHS

METHOD AND APPARATUS FOR CONTROLLING RETRACTION
OF COMPOSITE MATERIALS
Applicant: Kenneth B. Close et al.
Serial No.: 10/032,703

The paragraph beginning at page 10, line 8:

The composite elastic material of the present invention can have a cup crush to density ratio from about 1579 cm^2 to about 950 cm^4. The preferred cup crush to density ratio for the composite elastic material is from about 1500 cm^4 to about 1000 cm^4. A more preferred cup crush to density ratio for the composite elastic material is from about 1400 cm^4 to about 1100 cm^4. The most preferred cup crush to density ratio for the composite elastic material is from about 1300 cm^4 to about 1100 cm^4.

The paragraph beginning at page 14, line 20:

During heat activation the speed that the material passes over the rollers, 403, 404, and 405 can be varied. If multiple rollers are employed the speed that the material passes over the rollers can be the same or different, *e.g.*, the quenching vacuum roller(s) 405 can be run at a slower speed than the vacuum roller(s) in the heating section (mechanism) 403 and 404 to allow retraction to occur prior to cooling the web. It is important that the residence time in the heating chamber(s) is sufficient to allow the elastic layer to be heated sufficiently to allow it to retract.

The paragraph beginning at page 17, line 16:

The composite elastic material has a density less than about 0.085 g per cubic cm and a CD tensile strength of greater than about 0.68 pounds. The composite material can have a cup crush less than about 120 g per cm and can have a cup crush to density ratio of less than about 1579 cm^4 and greater than about 950 cm^4. Preferably, the cup crush to density ratio can be less than about 1500 cm^4 and greater than about 1000 cm^4. More preferably, the cup crush to density

ratio can be less than about 1400 cm^4 and greater than about 1100. Most preferably, the cup crush to density ratio can be less than about 1300 cm^4 and greater than about 1100.

The paragraph beginning at page 36, line 7:

One measure of the softness of a non-woven fabric sheet 1202 is determined according to the "cup crush" test by system 1100. The cup crush test evaluates fabric stiffness by measuring the peak load (also called the "cup crush load" or just "cup crush") required for a 4.5 cm diameter hemispherically shaped foot 1108 to crush a 17.8 cm by 17.8 cm piece of fabric 1202 shaped into an approximately 6.5 cm diameter by 6.5 cm tall cup shape, while the now cup shaped fabric is surrounded by an approximately 6.5 cm diameter cylinder cup 1110 to maintain a uniform deformation of the cup shaped fabric 1102. There can be gaps between the ring 1114 and forming cup 1110, but at least four corners 1106 must be fixedly pinched therebetween. The foot 1108 and cylinder cup 1110 are aligned to avoid contact between the cup walls and the foot that could affect the readings. The load is measured in grams, and recorded a minimum of twenty times per second while the foot is descending at a rate of about 406 mm per minute. The cup crush test provides a value for the total energy required to crush a sample (the "cup crush energy") which is the energy over a 4.5 cm range beginning 0.5 cm below the top of the fabric cup, i.e., the area under the curve formed by the load in grams on one axis and the distance the foot travels in millimeters on the other. Cup crush energy is reported in gm-mm (or inch-pounds). A lower cup crush value indicates a softer material. A suitable device for measuring cup crush is a model FTD-G-500 load cell (500 gram range) available from the Schaevitz Company, Pennsauken, N.J.

The paragraph beginning at page 39, line 6:

In the second bank in the meltblown process operates as a conventional meltblown head. The molten thermoplastic is extruded through fine die capillaries converging into a hot air

stream, which attenuates the filaments of molten material reducing their diameter. The high velocity air stream carries these meltblown fibers to the constant speed foraminous surface. Such a process is disclosed for example in U.S. Pat. No. 3,849,241 to Butin. The meltblown head used here utilizes 0.0368 cm diameter capillaries at a density of 12 capillaries per cm, and operates at a melt temperature of 250°C. The elastomeric polymer used to produce the meltblown fibers is a dry blended resin in the following proportions: 80% Dow Affinity® XUS59400.03L, 15% Regalrez 1126, and 5% Dow 6806. As the meltblown fibers are deposited on the foraminous surface carrying the previously formed, substantially parallel, filaments, autogeneous bonding occurs and discrete points where the still molten fibers cross over the filaments. The basis weight of the web prepared is about 9 grams per square meter.

The paragraph beginning at page 39, line 25:

The web is transported to an S-wrap roll arrangement by a series of idler rollers. The S-wrap rollers are driven to control their speed, and this combined with the large surface contact serves as a nip. The speed of the foraminous meltblown forming belt and S-wrap rollers travel at about the same speed and this speed is 50% of the speed of the calender rolls. This speed difference results in a 100% elongation of the elastic web between the S-wrap rolls and the calender roll. This stretching effect reduces the basis weight by about 50% (*e.g.*, due to web necking) and imparts significant stored energy to the elastomeric web as it is presented to be joined with the gatherable layers.

The paragraph beginning at page 42, line 3:

In order to obtain further retraction and increase the dimensional stability of the composite it is transferred to a foraminous drum in chamber 410 where it is held by vacuum. While held on the rotating, foraminous drum (*e.g.*, 403 of Fig 4A), or similar surface, the temperature of the web is elevated near the glass transition temperature (T_g) of the elastomeric center layer by drawing a heated air stream through the web. Monitoring the temperature of the

elastomeric portion of the composite is not possible as it is located between the gatherable layers and therefore the temperature of the external gatherable layers is used to monitor the process and is measured as it exits or transitions off the foraminous drum. This is a reasonable approximation for the heat transfer with the through-air process. The external web temperature required for this example is about 55°C. Once heated the web is transferred to a second vacuum drum in chamber 411 (*e.g.*, 404 of Fig 4A), or similar surface, through space. The web is them transferred to a subsequent vacuum drum in chamber 412, (e.g., 405 of Fig 4A), which is traveling slower than the heated drums (approximately 5% for this example) and additional retraction occurs between the two surfaces. Again an increase in basis weight of the web occurs. The third drum draws ambient air through the web reducing the temperature following the retraction step.

Docket No. 1443.002US1
WD #448276

KC Ref. No. 16,441.1

CLEAN VERSION OF PENDING CLAIMS

METHOD AND APPARATUS FOR CONTROLLING RETRACTION OF COMPOSITE MATERIALS

Applicant: Kenneth B. Close et al.

Serial No.: 10/032,703

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1. (AMENDED) method comprising
   a) providing a non-woven composite elastic material under tension;
   b) heating the composite elastic material;
   c) retracting the heated composite elastic material; and
   d) cooling the composite elastic material.

2. The method according to claim 1, wherein heating comprises heating the material by drawing heated air through the composite elastic material.

3. The method according to claim 1, wherein heating comprises heating the material to the softening point of the elastic layer.

4. The method according to claim 1, wherein retracting comprises retracting the material from about 2 % to about 15 %.

5. The method according to claim 1, wherein retracting comprises retracting the material from about 4 % to about 10 %.

6. The method according to claim 1, wherein heating comprises heating the composite elastic material on a first roller and cooling the material on a subsequent roller.

7. The method according to claim 1, wherein the composite elastic material is heated on a first roller, on a second roller, and cooling the material on a subsequent roller.

8. The method according to claim 6, wherein the speed of the material on the subsequent roller is about 2 % to about 15 % slower than the speed of the first roller.

9. The method according to claim 8, wherein the speed of the material on the subsequent roller is about 4 % to about 10 % slower than the speed of the material on the first roller.

10. The method according to claim 7, wherein the speed of the material on the subsequent roller is from about 2 % to about 15 % slower than the speed of the material on the second roller.

11. The method according to claim 10, wherein the speed of the material on the subsequent roller is from about 4 % to about 10 % slower than the speed of the material on the second roller.

12. The method according to claim 9, wherein heated air is drawn through the first roller and the second roller.

13. The method according to claim 9, wherein cool air is drawn through the subsequent roller.

14. The method according to claim 1, wherein the composite elastic material has a density less than about 0.085 g per cubic cm and has a CD tensile strength of greater than about 0.68 pounds.

15. The method according to claim 1, wherein the composite elastic material has a cup crush less than about 120 g per cm and a CD tensile strength of greater than about 0.68 pounds.

16. (AMENDED) The method according to claim 1, wherein the composite material has a cup crush to density ratio of less than about 1579 cm^4 and greater than about 950 cm^4.

17. (AMENDED) The method according to claim 1, wherein cooling includes cooling the composite material at on the subsequent roller, and then cooling on the winder roll.

18. (AMENDED) The method according to claim 17, wherein cooling includes cooling the composite material to first temperature on the subsequent roller and then cooled to a second temperature on the winder roll.

19. The method according to claim 18, wherein the first temperature is greater than the second temperature.

20. An apparatus for activating a composite elastic material comprising
   a) a material source providing the composite elastic material;
   b) a heating mechanism for heating the composite elastic material;
   c) a retracting mechanism receiving the composite elastic material from the cooling mechanism; and
   d) a cooling mechanism for cooling the composite elastic material from the heating mechanism.

21. The apparatus according to claim 20, wherein the material is a continuous web, the material is moved at a first speed and a second speed in the retracting mechanism.

22. The apparatus of claim 21, wherein the first and second speeds are different.

23. The apparatus of claim 22, wherein the first speed is greater than the second speed.

24. The apparatus of claim 23, wherein the first speed is about 846 feet per minute.

25. The apparatus of claim 21, wherein the material moves at a third speed in the retracting mechanism.

26. The apparatus of claim 25, wherein the first and third speeds are different.

27. The apparatus of claim 25, wherein the first speed is greater than the third speed.

28. The apparatus of claim 25, wherein the second and third speeds are different.

29. The apparatus of claim 25, wherein the second speed is greater than the third speed.

30. The apparatus of claim 25, wherein the second speed is less than the third speed.

31. The apparatus of claim 25, wherein the first speed is about 846 feet per minute.

32. The apparatus of claim 25, wherein the second speed is about 805 feet per minute.

33. The apparatus of claim 25, wherein the third speed is about 769 feet per minute.

34. The apparatus of claim 25, wherein the first speed is about 846 feet per minute, wherein the second speed is about 805 feet per minute, and wherein the third speed is about 769 feet per minute.

35. The apparatus of claim 25, wherein the retracting mechanism includes a first roller, a second roller, and a third roller, the material moves at the first speed on the first roller, the material moves at the second speed on the second roller, the material moves at the third speed on the third roller.

36. The apparatus of claim 35, wherein the cooling mechanism includes a winder receiving the material from the retracing mechanism, and the material moves onto the winder at a fourth speed.

37. The apparatus of claim 36, wherein the fourth speed is less than the first speed.

38. The apparatus of claim 37, wherein the first speed is greater than both the second speed and the third speed.

39. The apparatus of claim 36, wherein the first speed is about 846 feet per minute, wherein the second speed is about 805 feet per minute, wherein the third speed is about 769 feet per minute, and wherein the fourth speed is about 800.

40. The apparatus of claim 20, wherein the retracting mechanism comprises:

a first roller in contact with the material;

a second roller in contact with the material subsequent to the first roller;

wherein the heating mechanism comprises:

a heat source for supplying a heated gas;

a first vacuum inlet positioned within the first roller to draw the heated gas through the material and the first roller; and

wherein the cooling mechanism comprises:

a coolant source for supplying a coolant; and

a second vacuum inlet positioned within the second roller to draw the coolant through the material and the second roller.

41. (AMENDED) The apparatus of claim 40, wherein the material is a continuous web, the material exits the first roller at a first temperature, the material exits the second roller at a second temperature, the second temperature being less than the first temperature.

42. The apparatus of claim 41, wherein the retracting mechanism includes a third roller receiving the material from the first roller prior to the second roller, the material exits the third roller at a third temperature, and the third temperature is greater than both the first temperature and the second temperature.

43. The apparatus of claim 42, wherein the material at the material source is at a fourth temperature, and the fourth temperature is less than both the first temperature and the second temperature.

44. The apparatus of claim 40, wherein the third temperature is about 145 degrees F, the second temperature is about 118 degrees F, and the fourth temperature is about 80 degrees F.

45. The apparatus of claim 20, wherein the material moves from the material source at a speed of about 846 feet per minute and a temperature of about 80 degrees F.

46. The apparatus of claim 45, wherein the retracting mechanism moves the material at a first speed of about 846 feet per minute on the first roller and at a second speed of about 805 feet per minute on the third roller, and wherein the heating mechanism heats the material to about 145 degrees F when the material is traveling at the second speed on the third roller.

47. The apparatus of claim 20, wherein the heating mechanism heats the material while the material travels through the retracting mechanism, and wherein the cooling mechanism subsequently cools the material as the material travels through the retracting mechanism.

48. A composite elastic material prepared according to the process of claim 1.

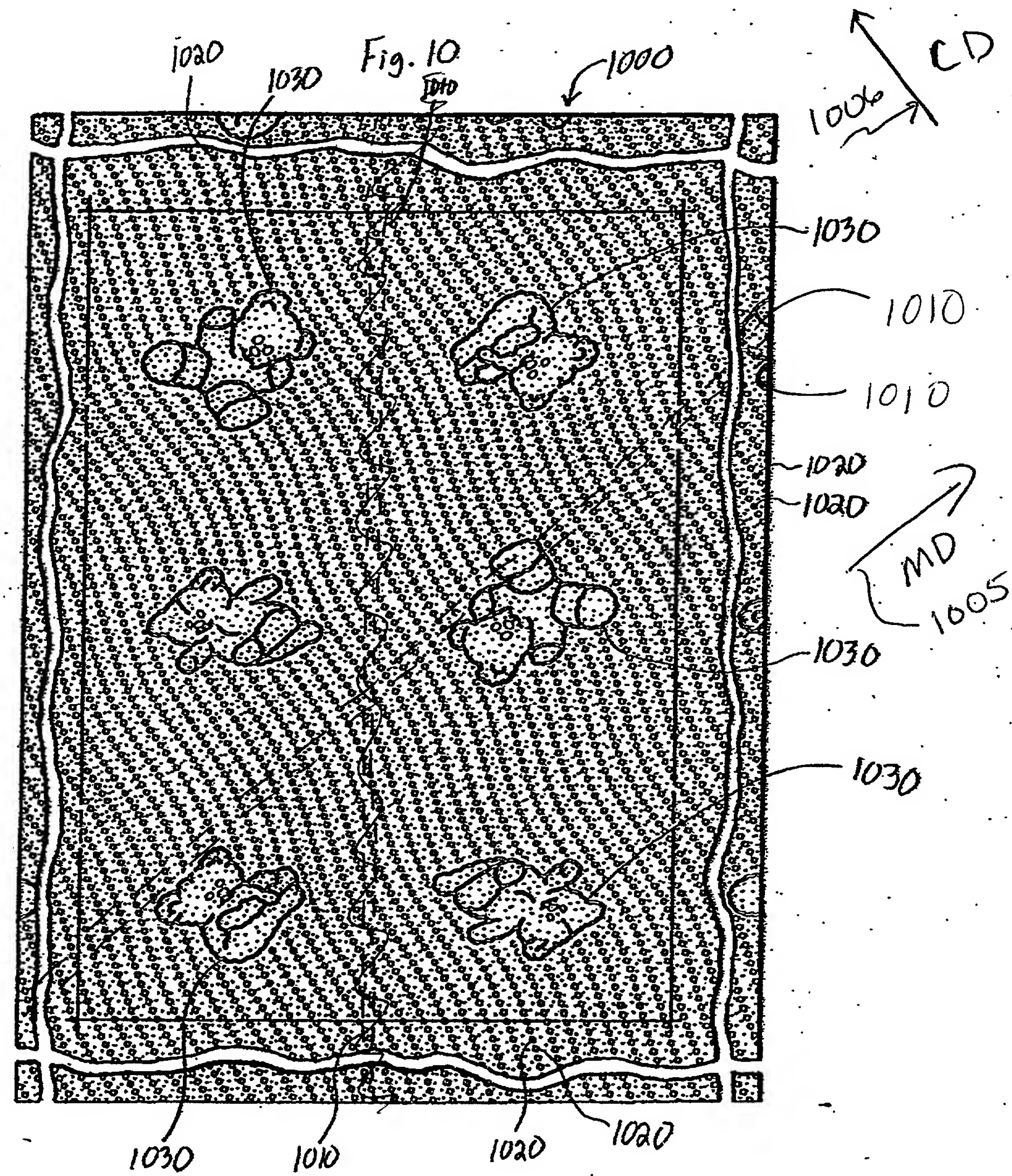

Fig. 10

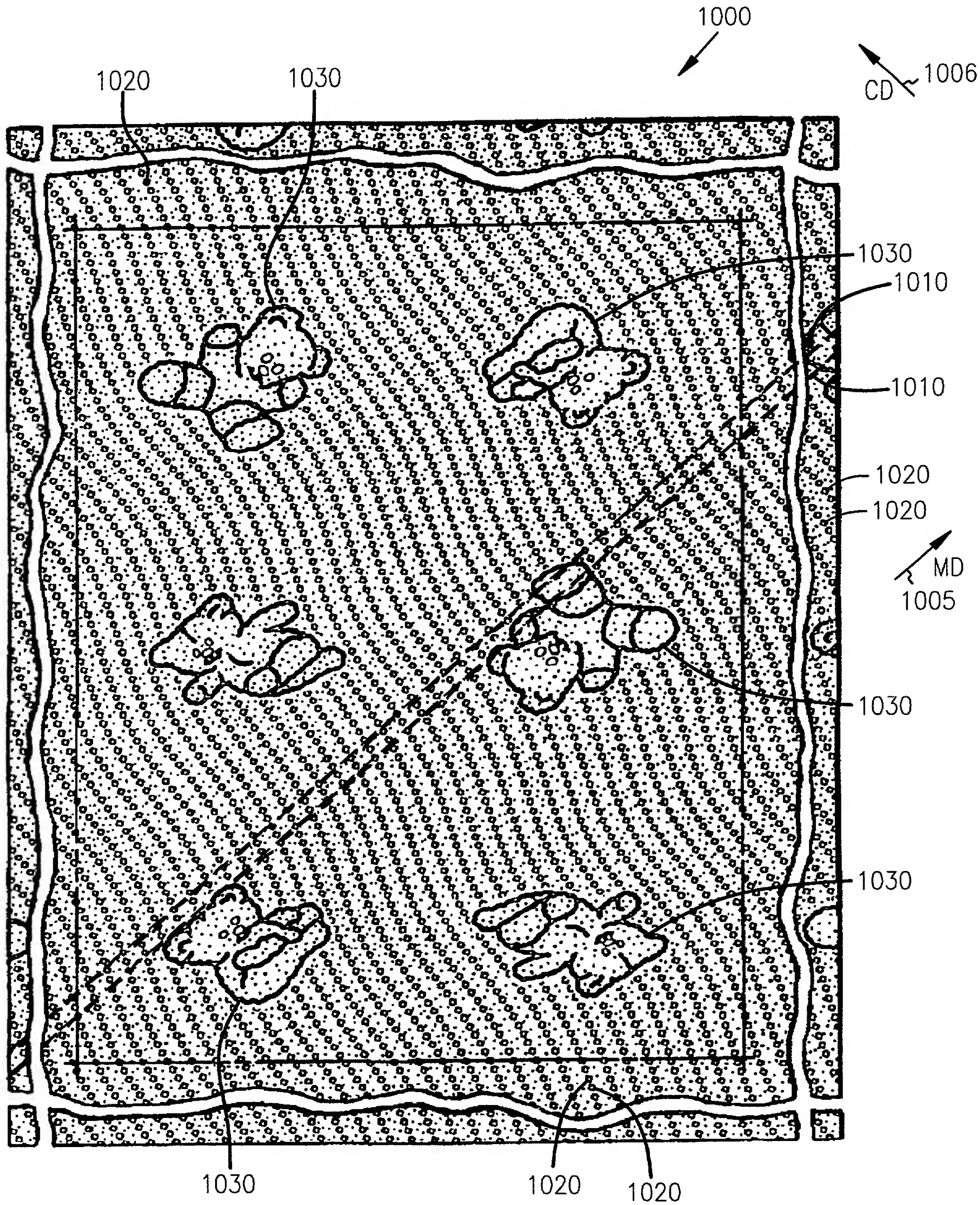
1000
1006
CD
1020
1030
1030
1010
1010
1020
1020
MD
1005
1030
1030
1030
1020
1020

FIG. 10